



Strasbourg, 26 November 2002
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T-PVS/Files (2002) 25 addendum

**CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS**

Standing Committee
22nd meeting

Strasbourg, 2-5 December 2002

Specific File

**Construction of a Motorway in the Gorge of Kresna
- Corridor No. 4 of transport: EU PHARE Project –
Connection Bulgaria - Greece**
(Motorway E79 : Sofia-Kulata)

Report by the NGOs

*Secretariat Memorandum
Prepared by
The Directorate of Culture and Cultural and Natural Heritage*

EXPLANATION NOTES

General part

The project is done on the basis of a contract between “The Bulgarian Society for the Protection of Birds” and Sole Proprietorship “Votan Consult – Petar Tzolov” signed on the 07th of July 2002.

The investor has assigned a Conceptual Design of an Alignment of Motorway “Struma”, in the section between the town of Simitly and the village of Dolna Gradeshnitsa. The minimal design speed is 90 km/h.; the cross-section width is 25.50 m. The investor has demanded that the areas of international importance of biodiversity, such as Important Bird Area “Tissata” (BG003) and CORINE site “Kresna” (00002500) should be avoided in the alignment design.

Technical descriptions of the variants

For the Conceptual design of the alignment of Motorway “Struma” six different variants were proposed. They were chosen using topographic maps in proximity of the alignment, scale 1:25,000 and 1:10,000. The variants of the alignment were presented and considered by the investor and two other Non Governmental Organizations – “Eco-club 2000” and “Balkani Wildlife Society”. Taking in consideration their requirements and advises and after visiting the area, 2 variants have been designed and shown in the project.

1st Variant

1. Situational layout.

This variant is worked out in cooperation with ecologists after deep investigation of the area, strictly marking the boundaries of the protected territories and gathering detailed visual impression of the area specifics.

Studying the cartographic material in scale 1:25,000 and 1:10,000 it became evident that 7 km eastward from the defile of Struma River the mountain skirts of Pirin Mountain rise at average height of 650 m above sea level, followed by sudden up-heights. This determined the decision of choosing the alignment to be in close proximity to the defile of Struma River – four kilometers eastward because of the relatively low elevation heights in this strip, 7 km wide, compared with the next areas of more than 800 m height. An alignment designed in the higher zones of the mountain skirts of Pirin will lead to significant increasing of its length, which is considered as non-efficient in the case.

The terrain of the surveyed zone is rough and deeply broken. The great number of rivers and streams flowing down in Struma River, some forming deep glens, additionally complicated the task. The necessity 3 mineral springs located there, to be protected also added difficulties to the alignment selection. The alignment is conformed to the existing natural gas pipeline and its easement to the Vlahinska River, where the pipeline goes west. The route avoid the settlements in the area, the protected areas under Bulgarian legislation and their Buffer zones (“Tissata” Reserve), as well as nature valuable areas of international importance “Kresna” CORINE Site (00002500) and the “Tissata” IBA (BG003).

These basic requirements were considered as benchmarks at the project beginning and determined an alignment starting from the existing road E-79 after a road interchange, semi clover-leaf type, in the town of Simitly and then going eastward along “Dalgata mahala”, tangent to it from the South. The alignment turns to the South, crosses Brezhanska River, enters from West in the massive of peak Vartichovchitza (811.4) and keeps South. The alignment is designed westward of the existing road Brezhany-Mechkul-Senokos along the slopes of the adjacent mountains. It crosses the road Stara Kresna-Oshtava, goes West of the mineral spring “Hladkata voda” and then East of the other mineral spring “Toplata voda”. After deep investigations and permanent consultations with the investor it was decided the alignment to be situated West of the village of Vlahi. The entering in the CORINE site “Kresna” has been developed in close cooperation and coordination with the ecologists in order to fulfill the requirements of all parties in the team. The alignment crosses Vlahinska River above the Valley of Meanders (picturesque turnings of the river), goes to the third mineral spring – “Gradishki Mineral baths”, passing it by East and then continues on the crest of “Padinata” to the village of Dolna Gradeshnitsa. We propose tangent bypassing of the village from East because after the survey

of the landscape it became evident that the existing building structures nearby road E-79 can't allow a width of the cross-section of 25.50m. After bypassing the village the alignment joins the existing road E-79.

The total length of the alignment is 29.41 km.

All standards of Regulation No 1/2000 for Road design has been taken into account.

The minimum radius of the horizontal curves, applied in the drawings, is 500 m. and the maximum radius is 3,500 meters.

2. Vertical Alignment design

The vertical alignment design is in accordance with all standards of Regulation No 1/2000 for Road design. The maximum longitudinal grade that is allowed for this class of roads is 5.5%. It is only used at the end of the alignment just for the length of 1.5 km. The minimum longitudinal grade of 0.5% for this longitudinal profile has not been used. The least longitudinal grade in the project is 1.485%.

The parameters of the vertical curves in accordance to the Regulations are:

- the minimum radius of a summit (crest) vertical curve is 5,700 m
- the minimum radius of a concave vertical curve is 2,400 m

In the vertical alignment design the minimum radius of the summit vertical curves is 15 000 m and of the concave ones – 10,000 m.

The highest passing level is 670.11 m at km 10.146.

The complicated terrain required designing of 6 tunnels with lengths respectively: 3,900; 305; 505; 565; 1,350 and 4,300 m. Their total length is 10,925m.

Eight bridges have been designed with length of 480; 480; 1,320; 1,160; 240; 160; 480 and 1,320 m; total length – 5,640meters.

The total length of the alignment is 29.41 km. The total length of the engineering structures (bridges and tunnels) is 16,565 m. They comprise approximately 56% of the total length of the alignment.

IInd Variant

1 Situational layout.

The second variant has been worked out as a sub- variant to the first one. After assigning from the investor, surveys have to be carried out exploring the possibility of going East of village Vlahi, continuing along CORINE site “Kresna”, without passing through it.

The alignment design of the second variant differs from the first one from km. 15.4 to km 27. It separates at km 15.4, goes East of village Vlahi and rejoins the alignment of the first variant at km 27.

The total length of the second alignment is 31.32 km.

All standards of Regulation No 1/2000 for Road design and the parameters, mentioned above, have been taken into account. The minimum radius of the horizontal curves in the new part of the alignment is 1,000 m.

2. Vertical Alignment design

The vertical alignment design of the second variant differs from the first one from km. 15.4 to the very end of the highway, where it rejoins the existing road E-79.

The vertical alignment of the second variant is presented on a separate drawing.

The highest passing level is 670.11 m at km 10.146, the same as in the first variant.

The complicated terrain required designing of 6 tunnels with lengths respectively: 3,900; 305; 505; 2,850; 670 and 5,700 m. Their total length is 13,930 m.

Eight bridges have been designed with length of 480; 480; 1,320; 1,200; 440; 480; 480 and 560 m. – total length of 5,440 meters.

The total length of the alignment is 31.32 km. The total length of the engineering structures is 19,370 m. That makes approximately 61.8% engineering structures of the total length of the alignment.

Geological survey

A meeting was carried out to clarify the potential problems with the geologists of the region. According to their materials 70% of the total length of the two variants are in zones of neogenic terrigenous coal-containing sediments (breccia conglomerates, sandstone, clays, sands and coals). These materials require steep side-slopes. The soils under new executed shallow side-slopes can be over moist and washed away by the rainwater. These geological soils have coefficient regarding Protodyakonov of approximately 2.0 (It indicates the strength of the materials and is mainly used in tunnel design for its inner coating).

Layers of continental molassic coal-containing sediments (conglomerate of sandstone and coal-containing mixture) are found near the village of Brezhany at the beginning of the alignment. These materials have coefficient regarding Protodyakonov of more than 2.0 and are suitable for tunnel building.

Comparison of the variants

General characteristics	Variant 1	Variant 2
Total horizontal length	29,410 m	31,320 m
Section on the ground	12,845 m	11,950 m
Section in viaducts and bridges	5,640 m	5,440 m
Section in tunnel	10,925 m	13,930 m
Maximum slope	5.5%	5.5%
Section in zones of nature conservation value	1,880 m	0 m
Sections in zones of nature conservation value in tunnel	1,250 m	0

Cost-benefit and technical analysis of the variants

Only approximate costs of the variants can be appraised at this stage of the project. Orientation prices in Euro can be offered on the basis of the conceptual design and engineering practice.

For appraisal several items have been taken in consideration – the amount of earth masses, the variety of bridges and tunnels, pavement, road facilities and devices. For the tunnels, longer than 800 m, vertical upcast shafts are necessary for forcible ventilation.

Ist Variant

The total cost of the road construction of this variant is around 370 000 000 Euro. The length of the alignment is 29,410 km. The construction cost of the highway per km is 12 600 000 Euro.

IInd Variant

The total cost of the road construction of the second variant is around 410 000 000 Euro. The length of the alignment is 31,320 km. The construction cost of the highway per km is 13 100 000 Euro.

Conclusions

We offer to the investor the first variant to be chosen due to the following:

- Less length
- Lower construction cost
- Less number of engineering structures

- The layout of the highway goes through the upper (eastern) part of CORINE site “Kresna” but it is designed in cooperation with ecologists (biologist and zoologists) and the objects under protection will not be damaged.

Chief Designer :

/Diploma Engineer P.Tzolov/

Kresna

Strategy for action

Aim:

Lobbying in front of Bulgarian and international institutions to accept the elaborated by BSPB alternative of the Motorway Struma as the appropriate solution as compromise between the development of the infrastructure in Bulgaria and nature conservation for the future generations.

Concrete objectives:

1. Presentation of the elaborated technical alternative in front of wider expert group and relevant stakeholders;
2. Development of the technical concept for the alternative as technical project equivalent to the alternatives elaborated so far; Proper Environmental impact assessment of the developed alternative together with the other alternatives
3. Carrying out of independent technical assessment of the alternative, as contribution to achievement of the overall goal – saving the Kresna Gorge biodiversity from destruction.
4. Decision of the Bern Convention and the European Commission to support the proposed by NGOs alternative.
5. Decision taken at governmental level to support the proposed alternative

Motivation:

Already 5 years the problem which is not still solved is if the Struma motorway is going to be build through the Kresna Gorge destroying unique habitats of threatened species, or to find out an alternative outside the gorge. So far no technically argued alternative was elaborated which achieve biodiversity conservation with combination of technically accepted parameters and reasonable prices. A concept for such alternative exist already and it have to be used as addition to the arguments for saving the biodiversity of Kresna Gorge.

Next steps:

1. Printing of brochure, which presents the alternative and how it contribute to the conservation of threatened species and sites of international importance – Tissata IBA and Kresna Corinne Site. (expected deadline – 1 November 2002)
2. NGO meeting for coordination of joint activities – 24 October 2002, 11'00 – 13'00, Votan Consult
3. Distribution of invitations for the alternative presentation meeting – 28 October 2002
4. Non official meeting for presentation of the alternative in front of key people from Wolderness fund, Ministry of environment and waters, Ministry of regional development and public work, Delegation of the European Commission in Bulgaria, National Nature History Museum.
5. Sending of the documentation related to the alternative to the Bern Convention Bureau and the European Commission (have to be coordinated and consulted with European Division and RSPB)
6. Meeting of NGOs for final discussion on the presentation of the alternative – 11 November 2002
7. Discussion meeting for the presentation of the alternative – 12 November, 10'00-13'00, followed by a press conference
8. Taking appropriate steps according to reactions of the institutions
9. Attempts to ensure and independent technical assessment of the proposed alternative.
10. Meeting of the experts in biodiversity of Kresna on elaboration of specific information about the biodiversity – maps of distribution, movements, etc. – period 18-22 November (not defined yet).
11. Presentation of the alternative in front of National NGO forum in BG and elaboration of common declaration for support of the alternative 23-24 November 2002

12. Presentation of the alternative at the Conference on Pre accession funds in Brussels (partner NGOs)– 25-26 November 2002

Our main message at this stage is the alternative to be further developed as technical project equivalent to the alternatives elaborated so far and an appropriate EIA to be carried out. The Road Construction Agency to invest in the elaboration of this alternative as appropriate (I have no suggestion so far). BSPB and the other involved NGOs to be involved in the elaboration process, including field visits together with the construction company.

Institutions which will be invited:

Ministry of Regional Development and Public Works

National Road Agency

Ministry of Environment and Waters (MoEW)

EU Delegation in Bulgaria

Blagoevgrad District Authority

Regional Inspectorate of MoEW in Blagoevgrad

Kresna Municipality

Simitly Municipality

Poleto Municipality

Krupnik Municipality

Oshtava Municipality

Stara Kresna Municipality

Dolna Gradeshnitsa Municipality

Vlahi Municipality

Brezhani Municipality

Senokos Municipality

PHARE office in Bulgaria

European Investment Bank

National Natural History Museum

BSPB BirdLife Bulgaria

Balkani Wildlife Society

Wolderness Fund Society

Ecoclub 2000

Za Zemyata Society

SPEA Company

VOTAN Consult Company

TOP GEO Company

Republic of Bulgaria - physical map



Struma river valley and Kresna gorge

